

路部33は、送受話部34及び制御部35とそれぞれ双方向性に接続されている。

【0016】制御部35は、子機3全体の動作制御を行うもので、動作を制御するためのデータが格納されたメモリ部37が双方向性に接続されている。また、制御部35の制御出力は、無線通信制御部36に導かれており、無線通信制御部36の出力は、送受信部32に導かれた構成となっている。

【0017】上記構成において、主制御部12、制御部35及び無線通信制御部17、36はそれぞれがソフトウエアを含む構成となっている。

【0018】図2は、通話チャネル接続部14をハード的に示したもので、INS通信回線の2つの通話チャネルに対応する2本の信号線b1、b2と、親機1及び子機3に対応する2本の信号線c1、c2との各交差点にスイッチ素子S1～S4を設け、各スイッチ素子S1～S4のオン/オフによって2つの通話チャネルと親機1及び子機3との接続制御を行うようになっている。

【0019】次に、上記構成のコードレスISDN端末の動作を説明する。

【0020】通話チャネルが2つとも空状態となっている場合、主制御部12は、この空状態となっている2つの通話チャネルを管理し、親機1の送受話部18による発信又は着信応答、及び子機3の送受話部34による発信又は着信応答のいずれをも受け付ける待機状態となっている。

【0021】そして、この状態において、親機1の送受話部18より発信要求があった場合、主制御部12は、通話チャネル接続部14を制御して、管理している2つの通話チャネルのうちの1つの通話チャネル（例えば、信号線b1）を選択する。すなわち、スイッチ素子S1をオンとして、信号線b1と親機1の信号線c1との接続を行う。これにより、親機1では、選択した1つの通話チャネルを使用して、通話回路部15、通話チャネル接続部14、通信制御部11の経路でINS通信回線2に発信を行い、これに応答した相手方との間で、選択した通話チャネルによる通話路を形成する。

【0022】また、相手方から1つの通話チャネル（例えば、信号線b1）を介して着信があると、主制御部12では、親機1及び子機3に対して着信検出信号を出力し、親機1及び子機3に対して呼び出しを行う。この呼び出しに回答して親機1の送受話部18が取り上げられると（オフフックされると）、主制御部12では、通話チャネル接続部14を制御して、着信のあった通話チャネルに送受話部18の接続を行う。すなわち、スイッチ素子S1をオンとして、信号線b1と親機1の信号線c1との接続を行う。これにより、発信側である相手方との間で、選択した通話チャネルによる通話路が形成される。

【0023】一方、このような親機1による通話状態に

において、子機3からの発信要求があると、主制御部12では、通話チャネル接続部14を制御して、空となっている他方の通話チャネルと子機3との接続を行う。すなわち、スイッチ素子S4をオンとして、信号線b2と信号線c2との接続を行う。

【0024】また、このような親機1による通話状態において、別の相手方からもう1つの通話チャネル（信号線b2）を介して着信があると、主制御部12では、子機3に対して着信検出信号を出力し、子機3に対して呼び出しを行う。この呼び出しに回答して子機3の送受話部34が取り上げられると（オフフックされると）、主制御部12では、通話チャネル接続部14を制御し、スイッチ素子S4をオンとして信号線b2と信号線c2との接続を行い、着信のあった通話チャネルを子機3との無線通話路にのせて、子機3の送受話部34との接続を行う。

【0025】これにより、親機1が通話中であっても、子機3からの発信又は着信応答が可能となる。

【0026】次に、2つの通話チャネルが空状態において、子機3の送受話部34より無線通話回線を使用して発信要求があった場合、主制御部12は、通話チャネル接続部14を制御して、管理している2つの通話チャネルのうちの1つの通話チャネル（例えば、信号線b1）を選択する。すなわち、スイッチ素子S3をオンとして、信号線b1と子機3の信号線c2との接続を行う。これにより、子機3では、無線通話回線を介して選択した1つの通話チャネルを使用し、通話回路部15、通話チャネル接続部14、通信制御部11の経路でINS通信回線2に発信を行い、これに回答した相手方との間で、選択した通話チャネルによる通話路を形成する。

【0027】また、相手方から1つの通話チャネル（例えば、信号線b1）を介して着信があると、主制御部12では、親機1及び子機3に対して着信検出信号を出力し、親機1及び子機3に対して呼び出しを行う。この呼び出しに回答して子機3の送受話部34が取り上げられると（オフフックされると）、主制御部12では、通話チャネル接続部14を制御して、着信のあった通話チャネルに送受話部34の接続を行う。すなわち、スイッチ素子S3をオンとして、信号線b1と子機3の信号線c2との接続を行う。これにより、発信側である相手方と子機3との間で、選択した通話チャネルによる通話路が形成される。

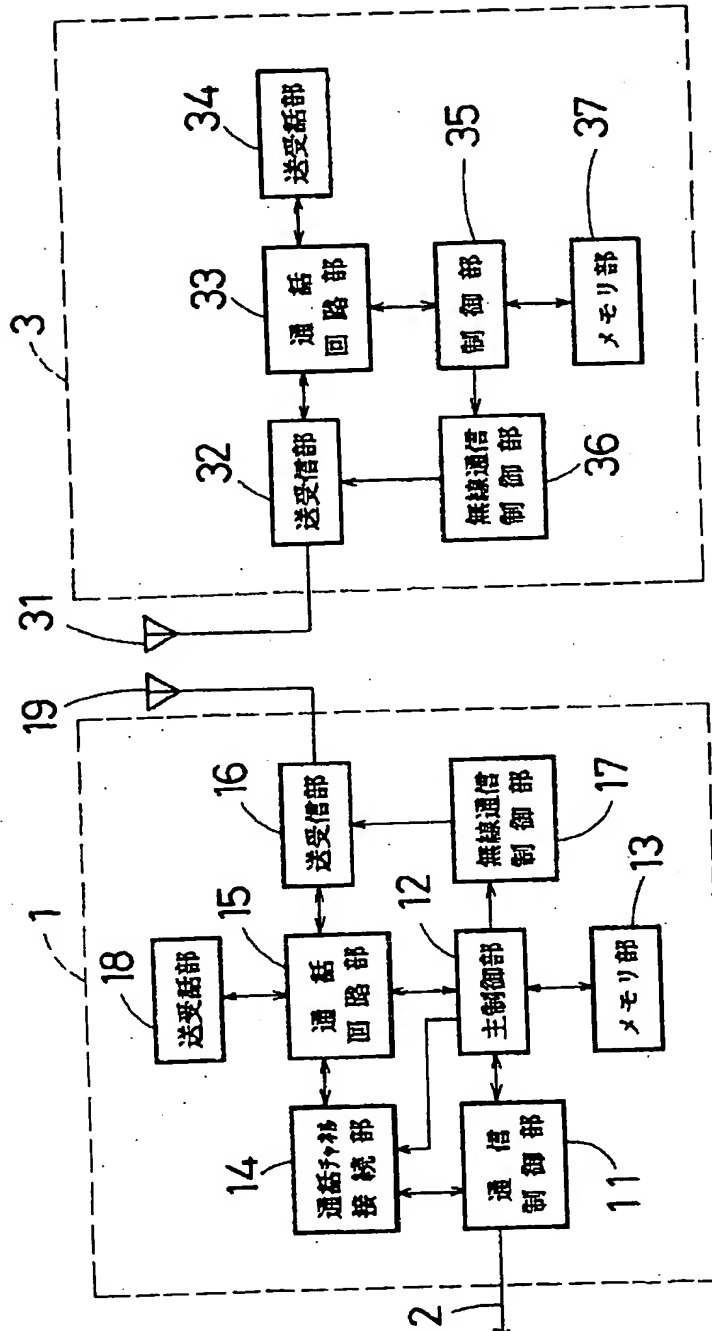
【0028】一方、このような子機3による通話状態において、親機1からの発信要求があると、主制御部12では、通話チャネル接続部14を制御して、空となっている他方の通話チャネルと親機1との接続を行う。すなわち、スイッチ素子S2をオンとして、信号線b2と信号線c1との接続を行う。

【0029】また、このような子機3による通話状態に

において、別の相手方からもう1つの通話チャネル（信号

(5)

【図1】



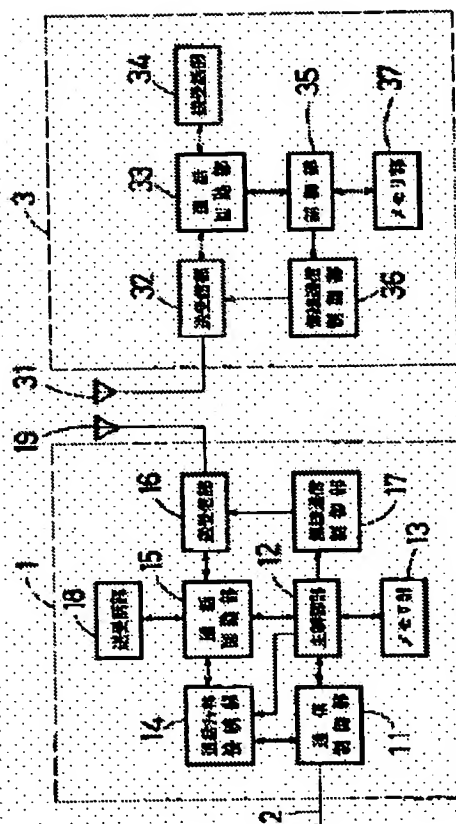
CORDLESS ISDN TERMINAL EQUIPMENT

Patent number: JP5122304
 Publication date: 1993-05-18
 Inventor: TANABE CHUZO
 Applicant: SHARP KK
 Classification:
 - international: H04B7/26; H04M1/00
 - european:
 Application number: JP19910279567 19911025
 Priority number(s): JP19910279567 19911025

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Abstract of JP5122304

PURPOSE: To provide the cordless ISDN terminal equipment in which a master set and a slave set make simultaneous talking.
CONSTITUTION: In the cordless ISDN terminal equipment consisting of a master set 1 connecting to an INS communication network and a slave set 3 connecting to the master set 1 through a radio line, the master set 1 is provided with a communication control section 11 controlling INS communication and a main control section 12 controlling the communication control section 11 so as to manage two independent speech channels of the INS communication line 2 thereby controlling the simultaneous use of the two speech channels by the master set 1 and the slave set 3.



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CLAIMS

[Claim(s)]

[Claim 1] In the cordless ISDN terminal with which the main phone connected to the INS communication network and this main phone consist of a cordless handset connected by the wireless circuit to said main phone By managing two independent message channels which controls the communications control section which controls an INS communication link, and this communications control section, and an INS communication line has The cordless ISDN terminal characterized by having the main control section which controls coincidence use of two message channels by said main phone and said cordless handset.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the cordless ISDN terminal with which the main phone connected to the INS communication network and this main phone consist of a cordless handset connected by the wireless circuit.

[0002]

[Description of the Prior Art] The conventional cordless telephone machine consists of cordless handsets to which the main phone connected to the telephone line and this main phone were connected by the wireless circuit.

[0003] In such a common cordless telephone machine, (1) main phone and a cordless handset can perform an interphone message. (2) Dispatch and reception can be performed through the telephone line from a main phone. (3) It has the various functions in which dispatch and reception can be performed through a main phone and the telephone line from a cordless handset.

[0004]

[Problem(s) to be Solved by the Invention] However, in the conventional cordless telephone machine, when either the main phone or the cordless handset was using the telephone line, there was a problem that the telephone line could not be used from other devices (a cordless handset or main phone).

[0005] This invention was made in view of the starting actual condition, and the purpose is in offering the cordless ISDN terminal with which either the main phone and the cordless handset made the message possible at coincidence.

[0006]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, the cordless ISDN terminal of this invention The main phone connected to the INS communication network and this main phone consist of a cordless handset connected by the wireless circuit. To said main phone It considers as the configuration equipped with the main control section which controls coincidence use of two message channels by said main phone and said cordless handset by managing two independent message channels which controls the communications control section which controls an INS communication link, and this communications control section, and an INS communication line has.

[0007]

[Function] In the main control section, two independent message channels which controls the communications control section and an INS communication line has are managed. For example, other one message channel which is vacant to the dispatch from a cordless handset or an arrival-of-the-mail response is assigned during a message with a main phone using one message channel. Moreover, other one message channel which is vacant to the dispatch from a main phone or an arrival-of-the-mail response is assigned during a message with a cordless handset using one message channel.

[0008] Thus, in another side, dispatch or the arrival-of-the-mail response of one side is attained using each transmitter-receiver of two independent message channels which an INS communication line has, the main phone which a cordless telephone machine has, and a cordless handset also in a message.

Moreover, since selection of such a message channel is performed by the main phone side, a cordless handset can perform dispatch or an arrival-of-the-mail response, without being conscious of two message channels to a main phone.

[0009]

[Example] Hereafter, one example of this invention is explained with reference to a drawing.

[0010] Drawing 1 is the block diagram showing the electric configuration of a cordless ISDN terminal.

[0011] The main phone 1 is connected to the INS communication network through the INS communication line 2.

[0012] The INS (Information Network System) communication network is equipped with two independent message channels (B channel) which are the system which added service further, is telephone-line 1 circuit, and had the transmission speed of 64 kilobits per second in the ISDN (Integrated Services Digital Network) communication network standardized internationally, and one channel (D channel) with the transmission speed of 16 kilobits per second.

[0013] This INS communication line 2 is connected to the communications control section 11 of the main phone 1 which interfaces an INS communication network, and the communications control section 11 is connected to the main control section 12 and the bidirection which perform motion control of the main phone 1 whole. Moreover, the communications control section 11 is connected to the message channel connection 14 and bidirection, and the message channel connection 14 is connected to the speaking circuit section 15 and bidirection. Moreover, a transmitter/receiver part 18 and the transceiver section 16 to which the antenna 19 was connected are connected to bidirection at the speaking circuit section 15, respectively.

[0014] The main control section 12 performs motion control of the main phone 1 whole, controls the communications control section 11, and manages two independent message channels. Moreover, while the memory section 13 by which the data for controlling actuation were stored in the main control section 12 is connected to bidirection, the speaking circuit section 15 is connected to bidirection. Moreover, the control output of the main control section 12 is led to the message channel connection 14 and the radio control section 17, respectively, and the output of the radio control section 17 is led to the transceiver section 16. The message channel connection 14 makes connection with two message channels, main phones, and a cordless handset by control from the main control section 12.

[0015] On the other hand, the cordless handset 3 is equipped with the antenna 31 which delivers and receives an electric wave between main phones 1, and this antenna 31 is connected to the transceiver section 32. Moreover, the transceiver section 32 is connected to the speaking circuit section 33 and bidirection, and the speaking circuit section 33 is connected with the transmitter/receiver part 34 and the control section 35 at bidirection, respectively.

[0016] a control section 35 -- a cordless handset -- motion control of the 3 whole is performed and the memory section 37 in which the data for controlling actuation were stored is connected to bidirection. Moreover, the control output of a control section 35 is led to the radio control section 36, and the output of the radio control section 36 has composition led to the transceiver section 32.

[0017] In the above-mentioned configuration, the main control section 12, a control section 35, and the radio control sections 17 and 36 have composition in which each contains software.

[0018] Two signal lines b1 and b2 corresponding to [drawing 2 is what showed the message channel connection 14 in hard, and] two message channels of an INS communication line, A switching device S1 - S4 are prepared in each crossing with two signal lines c1 and c2 corresponding to a main phone 1 and a cordless handset 3, and ON/OFF of each switching device S1 - S4 perform connection control with two message channels, main phones 1, and a cordless handset 3.

[0019] Next, actuation of the cordless ISDN terminal of the above-mentioned configuration is explained.

[0020] When both of message channels are in the empty condition, the main control section 12 manages two message channels which are in this empty condition, and is in the standby condition of receiving either the dispatch by the transmitter/receiver part 18 of a main phone 1 or an arrival-of-the-mail response and the dispatch by the transmitter/receiver part 34 of a cordless handset 3 or an arrival-of-the-

mail response.

[0021] And in this condition, when there is a dispatch demand from the transmitter/receiver part 18 of a main phone 1, the main control section 12 chooses one of two message channels which have controlled and managed the message channel connection 14 (for example, signal line b1). Namely, connection between a signal line b1 and the signal line c1 of a main phone 1 is made by setting a switching device S1 to ON. Thereby, in a main phone 1, one selected message channel is used, it sends to the INS communication line 2 in the path of the speaking circuit section 15, the message channel connection 14, and the communications control section 11, and the speech path by the selected message channel is formed among the other parties who answered this.

[0022] Moreover, if there is arrival of the mail through one message channel (for example, signal line b1) from the other party, in the main control section 12, an arrival-of-the-mail detecting signal will be outputted to a main phone 1 and a cordless handset 3, and it will call to a main phone 1 and a cordless handset 3. If this call is answered and the transmitter/receiver part 18 of a main phone 1 is taken up, the message channel connection 14 will be controlled by the main control section 12, and a transmitter/receiver part 18 will be connected to a message channel with arrival of the mail in it (if off-hook is carried out). Namely, connection between a signal line b1 and the signal line c1 of a main phone 1 is made by setting a switching device S1 to ON. Thereby, the speech path by the selected message channel is formed among the other parties who are origination sides.

[0023] On the other hand, if there is a dispatch demand from a cordless handset 3 in the talk state by such main phone 1, the message channel connection 14 will be controlled by the main control section 12, and connection with the message channel of another side and cordless handset 3 used as empty will be made in it. Namely, connection between a signal line b2 and a signal line c2 is made by setting switching device S4 to ON.

[0024] Moreover, in the talk state by such main phone 1, if there is arrival of the mail through another message channel (signal line b2) from another other party, in the main control section 12, an arrival-of-the-mail detecting signal will be outputted to a cordless handset 3, and it will call to a cordless handset 3. If this call is answered and the transmitter/receiver part 34 of a cordless handset 3 is taken up, the message channel connection 14 is controlled, connection between a signal line b2 and a signal line c2 is made by setting switching device S4 to ON, in the main control section 12, a message channel with arrival of the mail will be put on a wireless speech path with a cordless handset 3, and connection with the transmitter/receiver part 34 of a cordless handset 3 will be made in it (if off-hook is carried out).

[0025] Thereby, even if a main phone 1 is talking over the telephone, the dispatch from a cordless handset 3 or an arrival-of-the-mail response is attained.

[0026] Next, when a dispatch demand has two message channels from the transmitter/receiver part 34 of a cordless handset 3 in an empty condition using a wireless line of contact, the main control section 12 chooses one of two message channels which have controlled and managed the message channel connection 14 (for example, signal line b1). Namely, connection between a signal line b1 and the signal line c2 of a cordless handset 3 is made by setting a switching device S3 to ON. Thereby, in a cordless handset 3, one message channel chosen through the wireless line of contact is used, it sends to the INS communication line 2 in the path of the speaking circuit section 15, the message channel connection 14, and the communications control section 11, and the speech path by the selected message channel is formed among the other parties who answered this.

[0027] Moreover, if there is arrival of the mail through one message channel (for example, signal line b1) from the other party, in the main control section 12, an arrival-of-the-mail detecting signal will be outputted to a main phone 1 and a cordless handset 3, and it will call to a main phone 1 and a cordless handset 3. If this call is answered and the transmitter/receiver part 34 of a cordless handset 3 is taken up, the message channel connection 14 will be controlled by the main control section 12, and a transmitter/receiver part 34 will be connected to a message channel with arrival of the mail in it (if off-hook is carried out). Namely, connection between a signal line b1 and the signal line c2 of a cordless handset 3 is made by setting a switching device S3 to ON. Thereby, the speech path by the selected message channel is formed between the other parties and the cordless handsets 3 which are an

origination side.

[0028] On the other hand, if there is a dispatch demand from a main phone 1 in the talk state by such cordless handset 3, the message channel connection 14 will be controlled by the main control section 12, and connection with the message channel of another side and main phone 1 used as empty will be made in it. Namely, connection between a signal line b2 and a signal line c1 is made by setting a switching device S2 to ON.

[0029] Moreover, in the talk state by such cordless handset 3, if there is arrival of the mail through another message channel (signal line b2) from another other party, in the main control section 12, an arrival-of-the-mail detecting signal will be outputted to a main phone 1, and it will call to a main phone 1. If this call is answered and the transmitter/receiver part 18 of a main phone 1 is taken up, in the main control section 12, the message channel connection 14 will be controlled, connection between a signal line b2 and a signal line c1 will be made by setting a switching device S2 to ON, and a message channel with arrival of the mail will be connected to the transmitter/receiver part 18 of a main phone 1 (if off-hook is carried out).

[0030] Thereby, even if a cordless handset 3 is talking over the telephone, the dispatch from a main phone 1 or an arrival-of-the-mail response is attained.

[0031] in addition -- although the above-mentioned example explained the case where two message channels were used with a main phone 1 and a cordless handset 3 -- two or more sets of cordless handsets 3 and 3 -- at the cordless ISDN terminal which has ..., coincidence use of two message channels by the cordless handset 3 of arbitration and another cordless handset 3 is attained.

[0032]

[Effect of the Invention] Since the cordless ISDN terminal of this invention was considered as the configuration which equipped the main phone with the communications control section which controls an INS communication link, and the main control section which manages two independent message channels which controls this communications control section and an INS communication line has The effectiveness that coincidence use of the main phone by two message channels and a cordless handset is attained is done so using two independent message channels which an INS communication line has, and each transceiver section of the main phone and cordless handset which a cordless telephone machine has.

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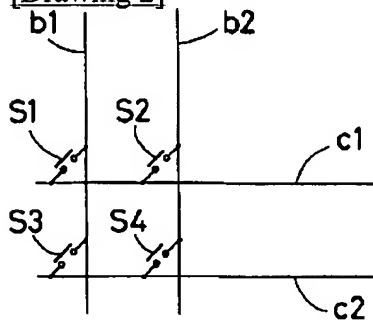
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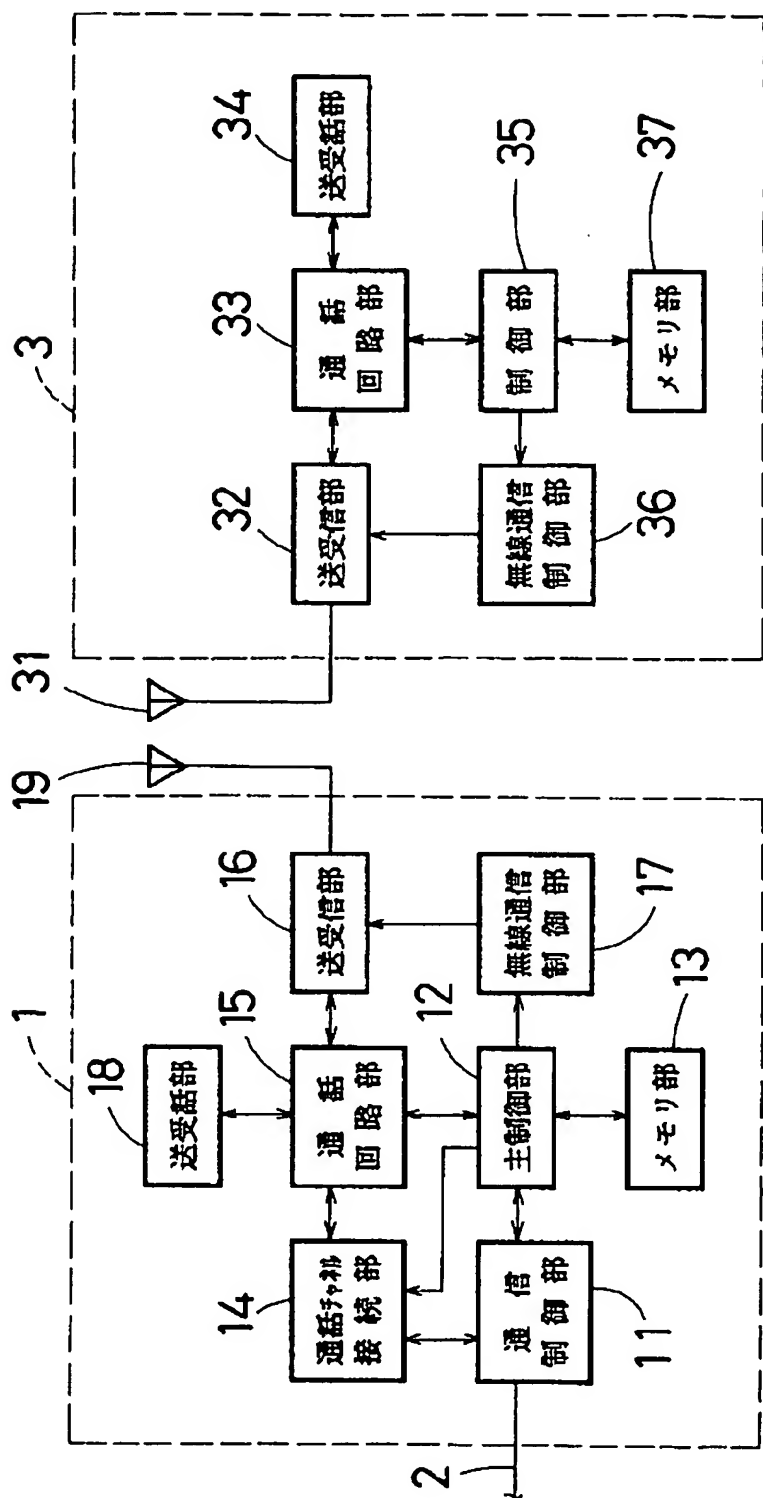
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DRAWINGS

[Drawing 2]



[Drawing 1]



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